IN THE CLAIMS:

Kindly replace the claims of record with the following full set of claims:

1. (Currently amended) A duobinary optical transmission apparatus comprising:

a light source for outputting an optical carrier;

a Non-Return to Zero (NRZ) optical signal generating section configured to receive an NRZ electrical signal, and for modulating the optical carrier from the light source into an NRZ optical signal according to said NRZ electrical signal; and

a duobinary optical signal generating section configured to receive said NRZ electrical signal and modulating said NRZ optical signal into a duobinary optical signal, the duobinary optical generating section comprising:

a T-flip-flop, having a first and second output port, for separating received "1" bit values of the inputted NRZ electrical signal into first and second groups,

a pair of second amplifiers for amplifying and outputting corresponding ones of the signals from each of the first and the second output ports of the T flip-flop; and

a second interference type optical phase modulator for modulating a phase of said NRZ optical signal according to driving signals from said pair of second modulators wherein said first group of "1" bit values has a first phase and said second group of "1" bits has a second phase different than that of the phase of the first group of "1" bits and said first group of "1" bits and said second group of "1" bits have a bit rate comparable to the NRZ signal. ~~associated with a first output of the first output port and said second group of "1" bit values has a second phase associated with the second output of the first output port~~.

2. (Original) The apparatus according to claim 1, wherein the light source comprises a laser diode.

3. (Previously presented) The apparatus according to claim 1, wherein the NRZ optical signal generating section comprises:

a pair of first modulator driving amplifiers for amplifying and outputting the NRZ electrical signal, and

a first interferometer type optical intensity modulator for modulating an intensity of said optical carrier according to driving signals inputted from said pair of first modulator driving amplifiers.

4. (Original) The apparatus according to claim 3, wherein said first interferometer type optical intensity modulator comprises a Mach-Zehnder interference type optical phase modulator.

5. (Cancelled)

6. (Original) The apparatus according to claim 1, wherein the NRZ optical signal generating section is adapted for receiving the NRZ electrical signal from a pulse pattern generator.

7. (Cancelled)

8. (Cancelled)

9. (Currently amended) A duobinary optical transmission apparatus comprising:

a light source for outputting an optical carrier;

a first modulator driving amplifier unit for receiving, amplifying, and then outputting at least one NRZ electrical signal;

an optical intensity modulator for modulating the intensity of the optical carrier according to a driving signal inputted from the first modulator driving amplifier unit;

a T-flip-flop, having a first and second output port, separating '1' bit values of the NRZ electrical signal into first and second groups of "1' bit values;

a second modulator driving amplifier unit for amplifying and outputting at least one signal outputted from the T-flip-flop; and

an optical phase modulator for modulating the phase of the NRZ optical signal according to at least one driving signal transmitted from the second modulator driving amplifier unit, wherein said first group of "1" bit values has a first phase associated with a first output of a first output port and said second group of "1" bit values has a second phase associated with a second output of the first output port and said first group of "1" bits and said second group of "1" bits have a bit rate comparable to the NRZ signal.

10. (Original) A duobinary optical transmission apparatus as claimed in claim 9, wherein each of the optical intensity modulator and the optical phase modulator comprises a Mach-Zehnder interferometer type optical modulator.

11. (Original) A duobinary optical transmission apparatus as claimed in claim 10, wherein the Mach-Zehnder interferometer type optical modulator is a dual-armed Z-cut Mach-Zehnder interferometer type optical modulator.

12. (Original) A duobinary optical transmission apparatus as claimed in claim 11, wherein each of the first and second modulator driving amplifier units includes a pair of modulator driving amplifiers, each of which amplifies the NRZ electrical signal inputted to itself.

13. (Original) A duobinary optical transmission apparatus as claimed in claim 10, wherein the Mach-Zehnder interferometer type optical modulator is a single-armed X-cut Mach-Zehnder interferometer type optical modulator.

14. (Previously presented) A duobinary optical transmission apparatus as claimed in claim 9, wherein the first group of '1' bit values in the sequence and the second group of '1' bit values in the sequence have a phase difference of 'π' with respect to each other.

15. (Currently amended) A method for duobinary optical transmission comprising the steps of:

(a) outputting a light source as an optical carrier;

(b) receiving an NRZ electrical signal and modulating the optical carrier from the light source into an NRZ optical signal according to said NRZ electrical signal by

providing a Non-Return to Zero (NRZ) optical signal generating section; and

(c) receiving said NRZ electrical signal and separating '1' bit values in the sequence of the NRZ electrical signal into a first and second group of '1' bit values and modulating said NRZ optical signal into a duobinary optical signal by a duobinary optical signal generating section by associating each element of said first group of '1' bit values with a first phase and each element of said second group of '1' bit values with a second phase, each phase associated with a phase generating signal and said first group of "1" bits and said second group of "1" bits have a bit rate comparable to the NRZ signal.

16. (Original) The method according to claim 15, wherein the light source used in step (a) comprises a laser diode.

17. (Original) The method according to claim 15, wherein the NRZ optical signal generating section used in step (b) comprises a pair of first modulator driving amplifiers for amplifying and outputting the NRZ electrical signal, and a first interferometer type optical intensity modulator for modulating an intensity of said optical carrier according to driving signals inputted from said pair of first modulator driving amplifiers.

18. (Original) The method according to claim 17, wherein said first interferometer type optical intensity modulator comprises a Mach-Zehnder interference type optical phase modulator.

19. (Previously presented) The method according to claim 15, wherein the duobinary optical generating section used in step (c) comprises a T-flip-flop for generating said phase generating signal from said inputted NRZ electrical signal;

a pair of second amplifiers for amplifying and outputting the signal from the T flip-flop; and

a second interference type optical phase modulator for modulating a phase of said NRZ optical signal according to driving signals from said pair of second modulators.

20. (Cancelled)